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ABSTRACT

The effectiveness of two media types (sound film and still slides with audiotape) in changing student attitudes, and their impact on students varying in field dependency levels was examined. Subjects, 82 college students scoring at the high and low extremes of the Group Embedded Figures Test (GEFT), were randomly assigned to either a (1) multi-cue (film); (2) moderate-cue (slides with audiotape); or (3) control presentation group. Hovland's Reinforcement Theory was the basis for this study, which was an attempt to replicate Cook's (1979) findings. Field-independent subjects generally had more positive attitudes toward soil conservation after treatments than field-dependent subjects, though not significantly, as measured using the Soil Conservation Attitude Test. Field-independent subjects in the film treatment had significantly more positive attitudes than both field-independent learners in the slide-tape group and field-dependent learners in either the film or slide-tape groups. It was concluded that a film will be more effective than a slide presentation of comparable quality in changing field-independent learners' attitudes toward soil conservation. Thirteen references are listed. (LMM)

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TITLE: Instructional Media, Attitude Change and Field Dependence

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Teachers have long suspected that their students' attitudes were important in the learning process, and researchers have tried mostly in vain to prove a definite cause and effect relationship between a positive attitude toward course material and achievement in that area. Common sense would seem to indicate that if students like something they will do it well. However, the elusive relationship between attitudes and behaviors has not been clearly identified (Simonson, 1979). This relationship need not be the only reason that educators should concern themselves with shaping or changing the attitudes of their students. There are situations, especially social, when the need to change or shape an attitude is the primary goal of the learning activity.

According to Simonson's (1980) extensive review of research dealing with learner attitudes and media, students liked to learn from media and, all other things being equal, were more likely to experience attitude change when the media type used to deliver a persuasive message was concrete, realistic and had many visual cues for the learner. However, media professionals cited agreed that there was no "best way" to change attitudes for all students.

Researchers have recently been investigating Aptitude-Treatment-Interactions (ATI) in order to obtain a better idea of the relationship between learner characteristics and instructional treatments. Scientists investigating this area have worked under the assumption that sub-groups of learners do learn better under certain circumstances. Wager (1975) went even further by saying that learning style and media or mode of presentation may be more highly related to attitude change than to cognitive or knowledge growth.

Because realistic media have been used to change attitudes and because different groups of learners have been shown to react differently to the same stimuli, it was decided that the broad purpose of this study would be to take

two types of media (sound film and still slides with audio-tape) and evaluate their effectiveness when being used to change the attitude of students. The impact of these media on students with different levels of the learner characteristic field dependence was also examined.

Definitions

Attitude: A mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related (Thomas and Znaniecki, 1918).

SCAT: (Soil Conservation Attitude Test) Attitude-measuring instrument developed to determine attitude toward soil conservation. This measure was administered immediately after treatments.

Treatment Groups:
(1) Multi-cue group, a 23-minute 16mm color film with sound, titled "We Are of the Soil."
(2) Moderate-cue group, a 23-minute 2x2 color slide set with audio-tape derived from the 16mm film, "We Are of the Soil."
(3) Control group, given no treatment, only the attitude measure.

Field-dependent: Learner characteristic typified by learners who rely on external referents as guides in information processing, as determined by the Group Embedded Figures Test (GEFT; Witkin, 1971). For this study field dependent learners were operationally defined as those with GEFT scores from the low 40% of all subjects' scores.

Field-independent: Learner characteristic typified by learners who rely on internal referents as guides in information processing as determined by GEFT. For this study, field independent learners were operationally defined as those with GEFT scores from the high 40% of all subjects' scores.

Pilot Study

The study described here was a modified replication of a pilot study by Cook (1979) titled "Persuasive Messages With Varying Amounts of Stimuli and Their Influence on the Attitude Changes of Learners". In this study, Cook used three types of media (16mm film, slides and audio-tape, and audio-tape alone) as treatments to test the amount of attitude change produced in high school students toward the topic of the media presentation, soil conservation. The slide presentation was produced from the 16mm film. The key frame of each scene of the motion picture was copied and made into a color slide, and the audio track of the film was dubbed onto an audio-tape. A team of raters evaluated both presentations and considered them to be of comparable technical quality.

Cook's study was an attempt to identify any relationship between learners grouped according to social background, IQ, pre-attitude toward soil conservation, and the media treatments. Unfortunately, no significant differences in attitude change were found between the various treatments for any of the groups. However, the trends of the data did support the hypothesis that film would be more effective than a slide/audiotape presentation at changing attitudes, even though the required level of statistical significance was not reached.

For this experiment, Cook's study was modified by rewriting and field-testing the measure of the dependent variable (SCAT), by selection of a learner

characteristic more likely to be related to attitude change and media treatment (field dependence), and by the random assignment of subjects to treatments.

Reinforcement Theory

Hovland's Reinforcement Theory, this study's theoretical basis, states that the number of incentives or cues in a message is related to the amount of attitude change produced in an audience. The greater the number of cues, the greater the possibility of attitude change. In order for attitude change to occur, the learner first must attend to, comprehend, and accept the message. A greater number of cues present tends to increase attention, comprehension, and acceptance. It was hypothesized that a greater number of cues in a persuasive message would tend to produce more attitude change (Insko, 1967).

Media and Attitude Change

A convincing number of studies in the literature have shown that media were capable of changing people's attitudes (Simonson, 1979b). Many researchers seemed to agree that in certain situations the more realistic forms of media, or those with more cues, were more likely to produce attitude change than the less realistic media types. Both film and slide-tape were found to be effective in changing attitudes, but film, the more realistic of the two, was reported to be more effective in more instances, all other things being equal (Simonson, 1979).

Field Dependence

Field dependence has been shown to be a pervasive, stable cognitive style that affects the perception of messages (McLeod, et al., 1978). Field dependent learners have been reported to be influenced by the environment, while

field independent learners have a greater tendency to respond to internal stimuli. Field dependent individuals are reported as being socially oriented. Field independent learners seem more able to disect ideas, while field dependent learners viewed concepts as a whole entity.

There seems to be some relationships between the topics of Reinforcement Theory, media type, attitude, and field dependence. Hovland's theory that the more cues there are in a message, the greater is the possibility of attention, comprehension, acceptance, and eventually attitude change, has been upheld by media research. Studies have shown that the more realistic (multi-cue) media have tended to be more effective at attitude change than media with fewer cues. In particular, films and slide-tapes were found effective in changing attitudes. However, film was generally more effective than slide-tape because motion pictures had more cues.

What effect media types have on learner characteristics has been studied but not sufficiently to draw general conclusions. According to Wager (1975), not enough research has been reported to determine if learning style was related to the media preferences of a learner.

Experimental Design

Campbell and Stanley's (1963) experimental design number four, the Randomized Control-Group Posttest Only Design, was used in this study. Students were randomly assigned to treatment groups, treatments were administered, and a post-test was given. The scores of each group's post-tests were compared to determine the impact of the treatments.

Dependent variable ----- measure of subject's attitude toward soil conservation (SCAT)

Independent variables -- A. method of presentation:

1. multi-cue (film)

2. moderate-cue (slide with audio-tape)
3. control

B. learner characteristics:

1. field dependent
2. field independent

Subjects

The subjects were all college students who were enrolled in an introductory instructional media course for teacher education students. Subjects were randomly assigned to treatments.

TABLE 1 - Assignment of Subjects

	Treatments			
Levels	Film	Slide/Tape	Control	Total
Field dependent	13	12	14	39
Field independent	14	13	16	43
Total	27	25	30	82

Measure of Attitude

No measurement instrument for the dependent variable, the need for soil conservation through minimum tillage, could be found in reference books listing attitude measures. Therefore, an instrument was developed to measure the students' attitudes toward soil conservation. To construct this measure, procedures from the book, How to Measure Attitudes, by Henerson et al. (1978) were followed. This Likert-scale attitude measure, Soil Conservation Attitude Test (SCAT), was developed through test-piloting and item analysis. The reliability of SCAT was determined to be .85. Experts in soil conservation rated the instrument a

valid one.

Procedure

To begin the experiment, a test of field dependence (GEFT) was given to the one hundred forty-eight randomly-selected students. Eighty-two subjects who scored at the high and low extremes of GEFT were then randomly assigned to one of three groups--control (no treatment), multi-cue (film), and moderate-cue (slide with audio-tape). The treatments were administered, followed immediately by SCAT, this study's dependent variable. SCAT scores were then used to test hypotheses.

Results

Table 2 shows the descriptive statistics produced from the post testing of all treatment groups using the Soil Conservation Attitude Test (SCAT). An analysis of variance test showed that the students in the film treatment had significantly more positive attitudes towards soil conservation than did control subjects ($p < .05$). Slide treatment subjects reported more positive attitudes than control subjects, also, but this difference was not statistically significant.

A multiple analysis of variance test showed a significant treatment effect ($P < .05$). A Duncan's test was used to determine where significant differences were located. It was found that field independent subjects who watched the persuasive film had significantly more positive attitudes towards the need for soil conservation than did any of the other five groupings of subjects.

The results of this study indicate the existence of a relationship between media, field dependence and attitude. Field independent learners in the film treatment scored significantly higher on the measure of the dependent

TABLE 2 - Results of Post-testing for Attitude Toward the Need for Soil Conservation

Levels	Treatment			
	Film	Slides	Control	Total
Field dependent subjects	$\bar{X}$ = 64.69 N = 13 SD = 6.76	$\bar{X}$ = 65.33 N = 12 SD = 7.39	$\bar{X}$ = 61.14 N = 14 SD = 8.47	$\bar{X}$ = 63.62 N = 39 SD = 7.64
Field independent subjects	$\bar{X}$ = 69.86 N = 14 SD = 4.85	$\bar{X}$ = 65.31 N = 13 SD = 7.96	$\bar{X}$ = 63.69 N = 16 SD = 7.95	$\bar{X}$ = 66.19 N = 43 SD = 7.42
Total	$\bar{X}$ = 67.37 N = 27 SD = 6.31	$\bar{X}$ = 65.32 N = 25 SD = 7.53	$\bar{X}$ = 62.50 N = 30 SD = 8.16	$\bar{X}$ = 64.96 N = 82 SD = 7.59

variable, than all other groups of subjects. In other words, the film seemed to influence the attitude of field independent subjects significantly more than subjects who viewed any of the other treatments, or the control subjects.

Discussion

In general, this study supports Hovland's Reinforcement Theory. Film treatment subjects tended to score higher on SCAT than slide-tape treatment subjects, who in turn scored higher than control subjects. Therefore, as was theorized, the multi-cue treatment (film) seemed to influence subjects' attitudes more than the moderate-cue treatment (slide-tape). Since the primary difference in the two treatment groups was the number of visual cues offered in the message, it can be hypothesized that a message presented with a greater number of cues (film) is more likely to promote attitude change than a message with a lesser number of cues (slide-tape), at least for subjects with a tendency towards field independence.

This study also supports the findings of researchers such as Simonson (1978) who found that a message delivered by a media type with more visual cues was more likely to create a positive attitude toward a subject, and Wager (1975) who used Dale's Cone of Experience (1946, page 39) to hypothesize that realistic media (media with more cues) were more apt to show a positive attitude response when a "new idea" was suggested to learners.

Not much research has been done on how learner characteristics relate to the persuadability of subjects or if there is any preference toward media type exhibited by learners of one learning style or another. This study found that overall, field independent subjects tended to have more positive attitudes after the treatments than field dependent subjects, but that this difference was not statistically significant. However, field independent subjects in the film treatment tended to have significantly more positive attitudes than field

independent learners in the slide-tape group and also more positive ones than field dependent learners in either the film or slide-tape groups.

Why field independent learners reacted more to the film than field dependent learners, and why they reacted more than other field independent learners who watched the slide/audio tape presentation is the most interesting finding of this study. Superficially, the only differences between this group and all others was the fact they participated in the film treatment, and had a tendancy to be field independent. One might conclude that in order to change the attitudes of field independent learners, a film will be more effective than a slide presentation of comparable quality. at least if soil conservation is the topic. Certainly, this conclusion warrants further scientific investigation in future studies.

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